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***Agathodes designalis* (Guenée, 1854) from Gibraltar - an adventive species new to Europe (Lepidoptera: Crambidae, Spilomelinae)**

C. E. Perez, R. M. Guillem & M. R. Honey

Abstract

Agathodes designalis (Guenée, 1854) is recorded for the first time in Europe, from Gibraltar.

KEY WORDS: Lepidoptera, Crambidae, Spilomelinae, *Agathodes designalis*, Gibraltar.

Agathodes designalis (Guenée, 1854) de Gibraltar - una especie advenediza nueva para Europa (Lepidoptera: Crambidae, Spilomelinae)

Resumen

Agathodes designalis (Guenée, 1854) se cita por primera vez en Europa, de Gibraltar.

PALABRAS CLAVE: Lepidoptera, Crambidae, Spilomelinae, *Agathodes designalis*, Gibraltar.

Introduction

Worldwide, there are sixteen species of the genus *Agathodes* Guenée, 1854 (Lepidoptera: Crambidae), distributed primarily in India, South-east Asia, sub-Saharan Africa, Australia, South and Central America, with isolated species on islands such as Japan, Madagascar, Samoa and São Tomé (NUSS *et al.*, 2017). *Agathodes designalis* (Guenée, 1854) normally occurs throughout South and Central America (SOURAKOV, 2012). It also occurs in North America, having become established in the eastern United States from South Carolina to Florida and west to Arizona and Texas (SOURAKOV, 2011). The species is commonly known as the *Erythrina* leaf-roller, because the larvae feed on the genus *Erythrina* L. (Fabaceae), feeding on flowers during the spring and then on the leaves in the summer and autumn (SOURAKOV, 2013). Until now, the species has not been recorded from Europe.

The UK Overseas Territory of Gibraltar sits on the eastern end of the Strait of Gibraltar at the southern end of the Iberian Peninsula, bordering Spain. We hereby record the presence of *Agathodes designalis* in Gibraltar, providing the first records of the species for Europe and the Palearctic.

Material and methods

Moth trapping takes place in the Gibraltar Botanic Gardens on a nightly basis, using a Rothamsted trap. This effort is occasionally augmented by using a 125W MV Robinson moth trap.

During an intense campaign of moth trapping at the site with the Robinson trap in the spring and summer of 2017, a rather colourful (male) crambid of the genus *Agathodes* was captured on 9-VI-2017 (Figure 1). Unable to identify the species, a photograph was sent to one of the authors (MRH), a former curator and now Scientific Associate of the Natural History Museum, London, for identification. After

consulting the genus *Agathodes* in the collections in the Museum, the conclusion was that this was a specimen of *Agathodes designalis* (Guenée, 1854).

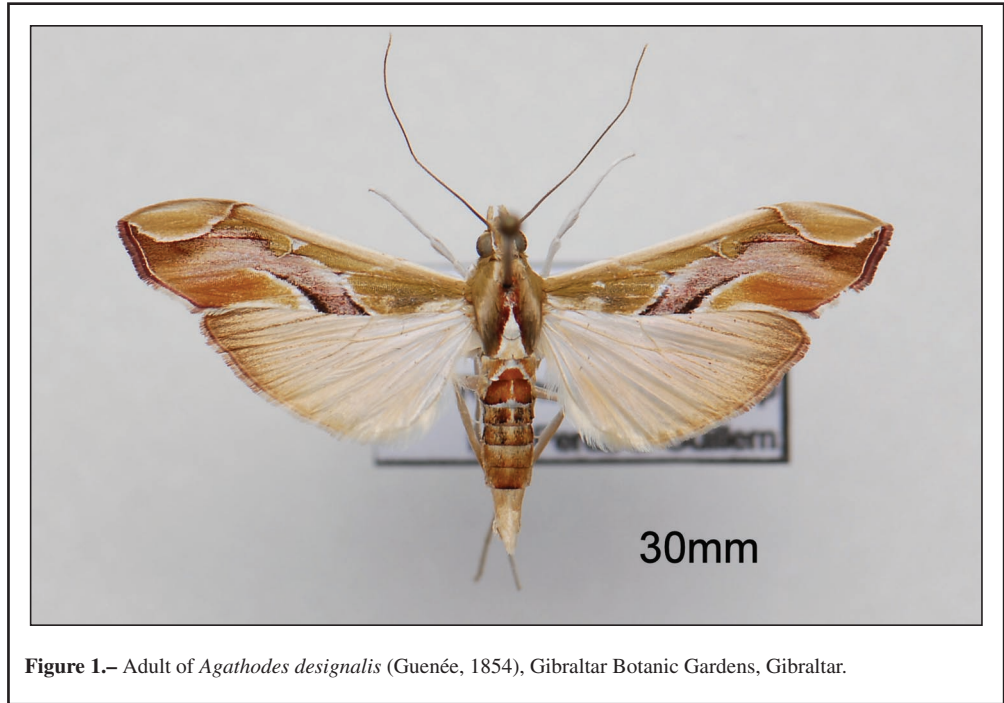


Figure 1.— Adult of *Agathodes designalis* (Guenée, 1854), Gibraltar Botanic Gardens, Gibraltar.

A further three specimens of this moth were trapped on the 4-VII-2017, 12-VII-2017 and 23-VIII-2017 (all males). All were captured with the Robinson trap, where catches are normally larger and more diverse than is usual with a Rothamsted trap.

Discussion

This was an unexpected find, with four individuals captured during a period of 45 days. Although not numerous, the first and last captures were fresh specimens and this, together with the distribution of records, suggests that the species may have established itself in the Gibraltar Botanic Gardens. There are three species of *Erythrina* growing outdoors in the gardens: one *Erythrina crista-galli* L., one *Erythrina humeana* Spreng. and several large *Erythrina lysistemon* Hutch. In addition, the closely related *Erythrina caffra* Thunb. is used around Gibraltar as an ornamental plant in landscaping, including close to the Botanic Gardens. Despite searching the flowers and leaves of some of the trees in the Botanic Gardens, no larvae were found near ground level, although some of the canopies were inaccessible. The *E. crista-galli* had been purchased from a garden centre in Malaga province (Spain) in 2005, whereas the others had been grown from seed that had been sourced from South Africa in the late 1990s. Thus, only the *E. crista-galli* may have been responsible for introducing the moths, but this seems unlikely given the twelve years that had elapsed between the tree's importation and the moth's detection. Other possibilities include importation with other *Erythrina* species in Gibraltar or ship-assisted passage from the Americas, with a fecund female making landfall and establishing itself in the Botanic Gardens. The latter is quite possible given the volume of marine traffic through the Strait of Gibraltar. A further search for larvae will be conducted in 2018.

HEPPNER (2007: 282), also mentions Oleander, *Nerium oleander* L., as a food plant for *Agathodes* in Florida, along with several other plants. This species is frequently used in landscaping throughout Gibraltar but we have not yet checked plants for signs of larvae. If the species favours this plant then *Agathodes designalis* could soon spread throughout Spain, as the plant is commonly found both in a naturalized/wild state along river-beds and in ornamental landscaping. It is also possible that the moth may have arrived to Gibraltar with the *E. crista-galli* from Spain so it might also be useful to check *Erythrina* and *Nerium* plants in southern Spain.

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